

Retrofitting EV Charging Stations in Strata

Webinar | 30 March | 10am



Agenda

- Overview, Trends & Challenges
- Legislation & Compliance
- EV Charging Integration into your Scheme's Electricity Network
- Risks & Safety
- Key Messages



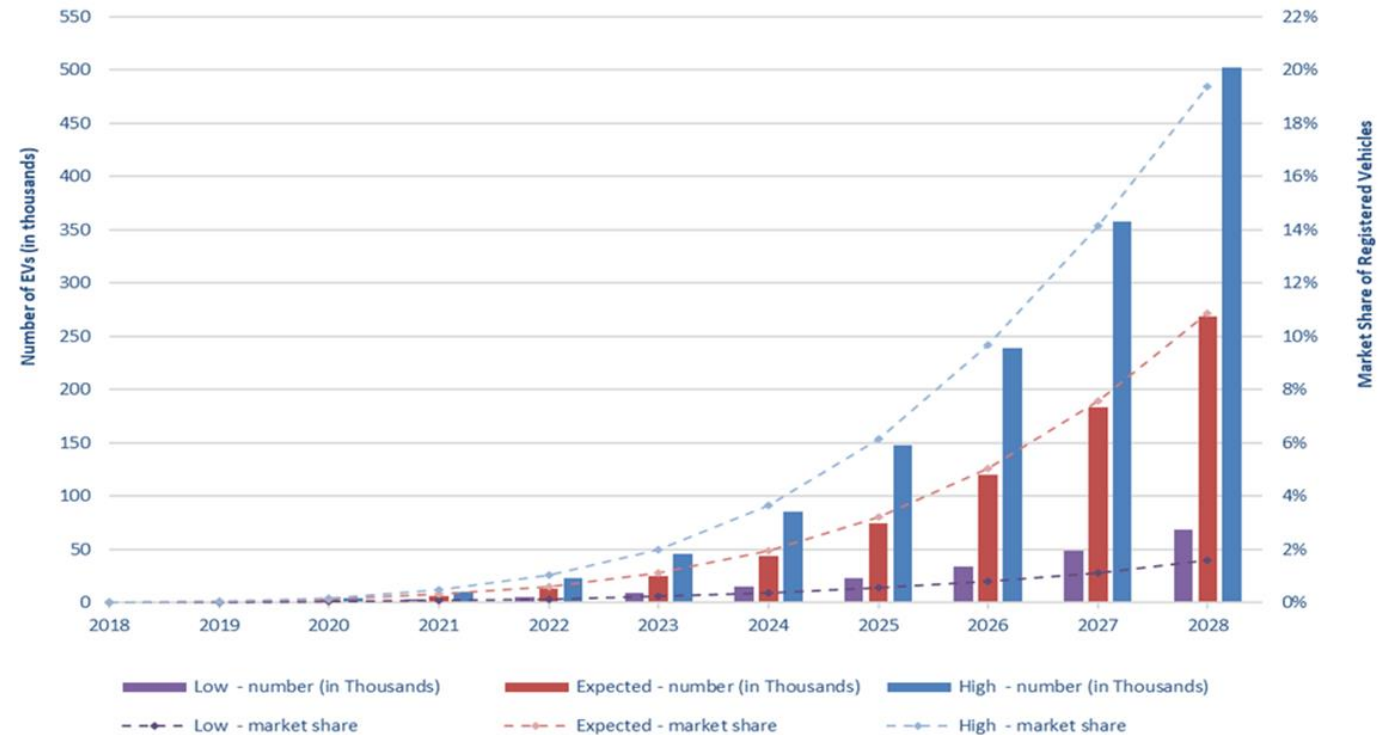
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Overview

- EV's are arriving fast
- A modest Australian EV uptake is estimated to be (49%) of total vehicle purchases by 2030
- 1 in 5 Australians live in strata, which is a huge proportion of people that will face the associated challenges, when attempting to charge and store their EV



Source: SCA SEVIT Taskforce



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Trends: Cost of Energy

The cost of electricity is cheaper than petrol



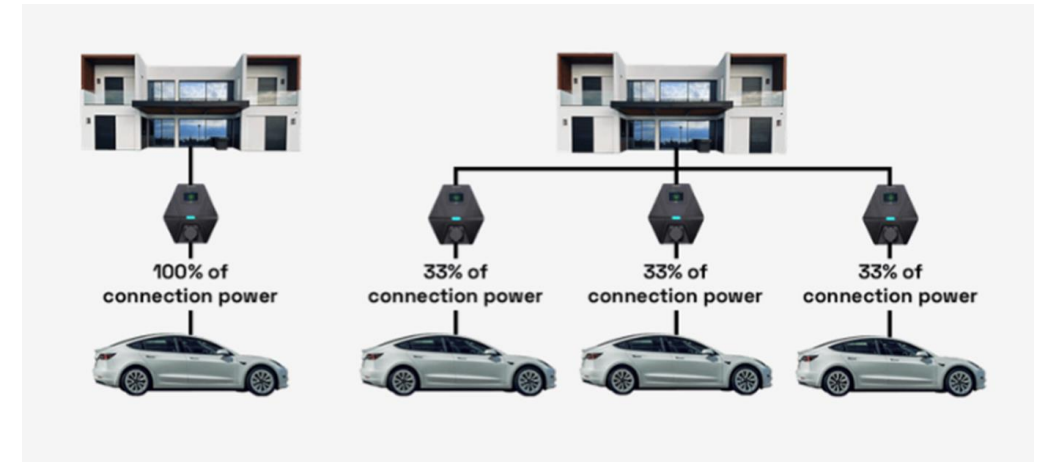
Source: EV Council of Australia

Trends are showing us that as EV purchase prices fall, more people will adopt EV over Internal Combustion Engines (ICE), generating an increasing demand for EVC (Electric Vehicle Charging) in your Strata scheme

Challenges: What are we seeing?

Equity Concerns

- Individual EV owners want access to charging; however, Strata Schemes want to establish equitable solutions before approving individual charger requests
- If not well thought out, first adopters could secure an electrical charging solution that possibly inhibits later adopters from the same level of electricity access, or possibly none at all

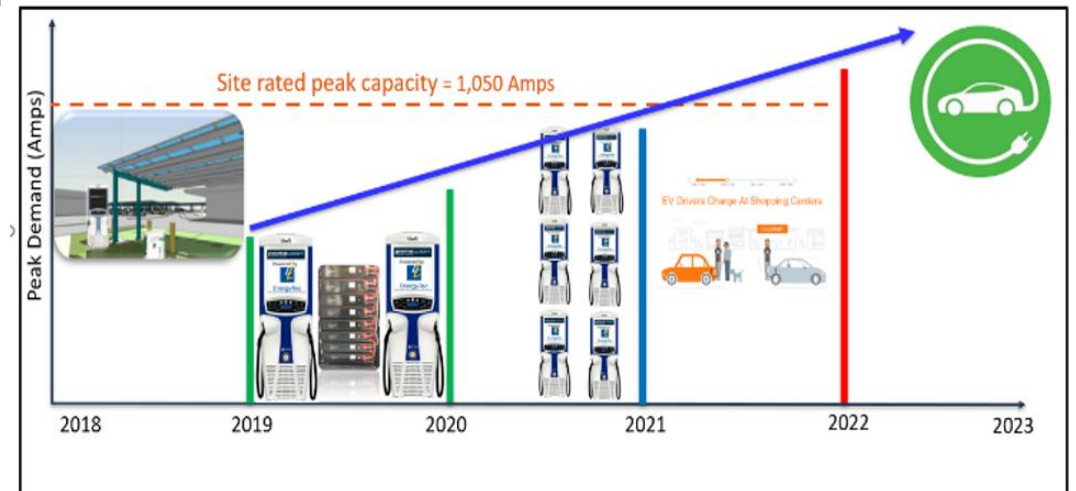


Some Strata Schemes are introducing Bylaws to prevent EV charging devices until they can develop and formalize a whole of site EV roadmap

Challenges: Electrical Capacity

Limited, or insufficient electrical infrastructure and available capacity

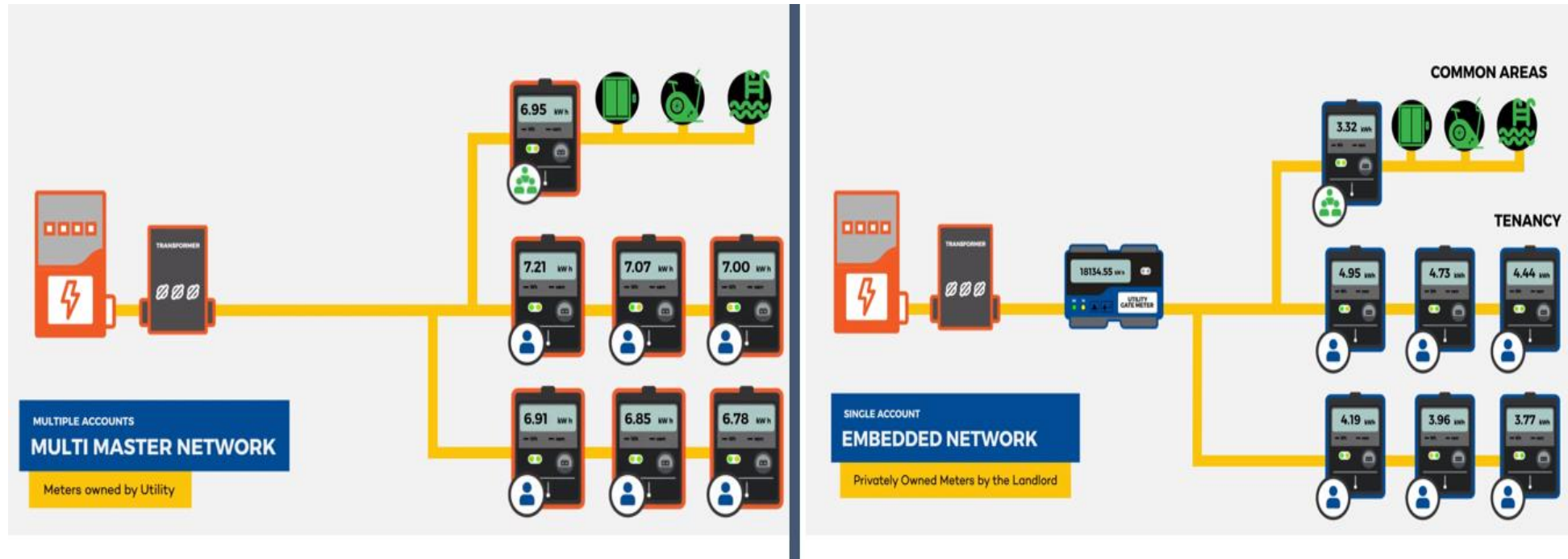
- Most buildings do not have the required electrical infrastructure to adequately support EV charging for every lot
- Most buildings do not have adequate spare electrical capacity to service every lot with an EV charger
- This is especially true for older and even recent builds
- A high proportion of schemes are small to medium size, meaning there is often less division on the cost for infrastructure



Capacity Roadmap

Challenges: Energy Billing

Most strata schemes have one of two common electrical network configurations

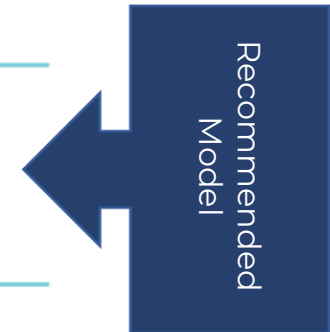


Each configuration requires a slightly different EVC implementation project approach

Energy Billing Models

ELECTRICITY PROCUREMENT MODELS

Network Model	Ownership Model	Purchasing Model
01. Multi Master Network	a. Western Power Sub Meter Ownership	The residents / occupants (consumer) individually purchase their electricity from the regulated licensed electricity retailer (Synergy).
	b. Complete Scheme Ownership	The scheme can purchase the cheapest energy under a supply contract for the entire site. Where eligible (50,000 kWh per annum) for retail contestability, they have access to a competitive energy market for both electricity and gas.
02. Embedded Network	c. Part Scheme / Part Third Party Ownership	The lots individually purchase their electricity from the licensed or exempt electricity retailer and pay fees for the use of the infrastructure.



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Need to start planning!!

- If you do not take control, you run the risk of your scheme turning into a spaghetti factory, worst case, losing power or catching fire.
- Understand the limitations of the scheme
- Prepare a management plan for the introduction of EV's (1 to 3yr rollout) and consult with the Owners on when this will be implemented
- Understand the legislation
- Review and adopt appropriate by-laws
- Start budgeting



Legislation

Assume the proposed fitout is for the cabling from the owner's car bay to the lot meter:

- **s. 63 – Utility service easement**

Could progress the cabling under a utility service easement.

No approval required if it does not interfere with the use and enjoyment of the lots and common property in the scheme.

Needs to provide the documentation relating to the cabling.

- **s. 64 – Utility and sustainability easement**

Infrastructure contract – ordinary resolution.

The Strata Company acknowledges that the Infrastructure Owner is entitled to:

- enter into, pass over and access the Common Property;
- install and remove the Infrastructure within the Easement Area;
- operate the Infrastructure within the Easement Area;
- inspect, maintain, repair and replace the Infrastructure within the Easement Area; and
- subject to obtaining the prior written approval of the Strata Company, modify the Infrastructure within the Easement Area



Legislation

- Alternative methods for approval:
 - Exclusive use by-law – resolution without dissent
 - Lease of common property
 - License of common property



Compliance

A properly drafted by-law will help to provide a Governance structure around the implementation of EVC's. Suggest:

- An EV Charging Station must not be installed into a car bay without the prior written consent of the Strata Company.
- The Strata Company may:
 - charge a fee to consider a request for consent;
 - require the Owner enters into a license agreement or infrastructure contract with the Strata Company that may condition any subsequent approval that may be granted;
 - limit the charging capacity of the EV Charging Station (maximum allowance 15/kw/hr) to help regulate the electricity load management of the Scheme;
 - designate where and how the EV Charging Station must be connected to the Scheme's electricity infrastructure



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Compliance

- The Strata Company may - continued:
 - require that the EV Charging Station be metered, ensuring the utility usage can be easily recorded and subsequently on-billed to the Occupier, subsequent charges may include any meter reading and billing costs that the Strata Company may charge or recover in performing this administrative duty;
 - withhold consent if the Strata Company, acting reasonably, considers the proposed installation of an EV Charging Station would cause an unreasonable strain on the electricity load capacity of the Scheme;
 - prescribe an authorised and qualified provider that may install the EV Charging Station;
 - prescribe an authorised and qualified provider that may be required to sign-off on the works that are undertaken and warrant that the system has been correctly installed; and
 - require an Occupier to attend an induction before it is permitted to use an EV Charging Station.
- The Strata Company may enter into an agreement with an appropriate authorised service provider in respect of the installation, maintenance and repair of an EV Charging Station.



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EV Charging Integration into your Scheme's Electricity Network

Considerations:

- Current energy billing setup;
- Condition of electrical infrastructure;
- Electrical capacity / limitations;
- Layout of the existing electrical infrastructure;
- Ownership structure of the carpark/s

All need to be considered before an equitable solution can be developed

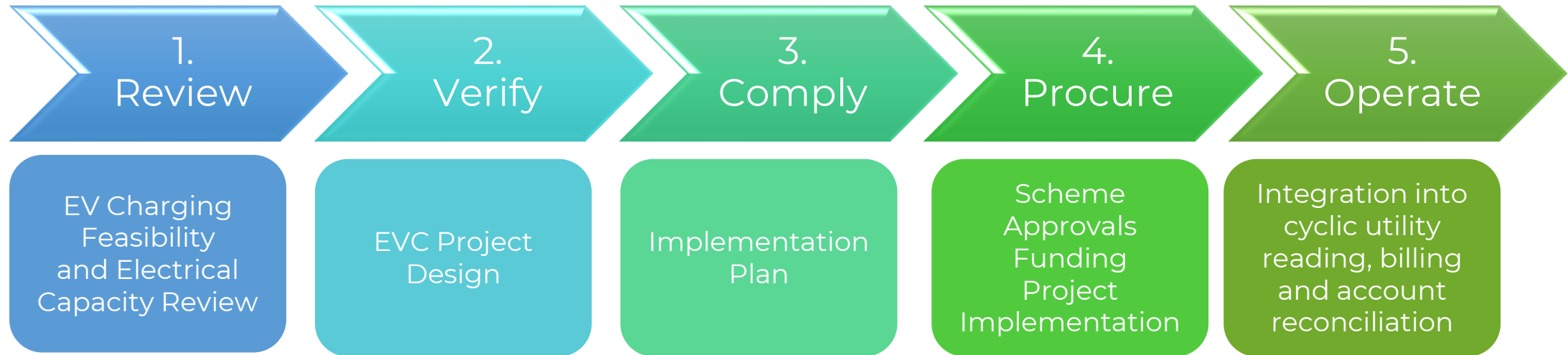


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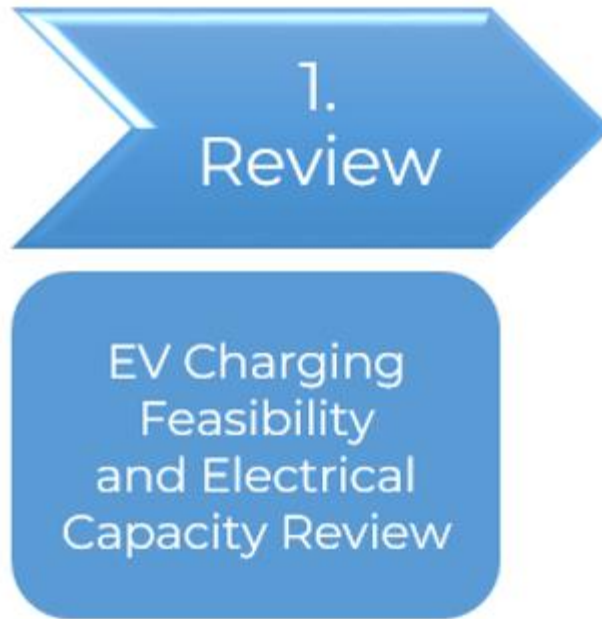


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Key Steps



Review



EV Charging Feasibility needs to address:

- Condition / suitability of infrastructure- lifecycle, compliance
- Access to Charging – Equitable / scalable for all lot owners
- Available Capacity, Risk Mitigation – Load balancing
- Fire Risk - Mitigation
- EV Weight - Structural Considerations
- Electrical Connection & Hardware Costs & Budgets
- Indicative solution layout
- Charge times – peak high cost, off peak – low cost
- Charge Rates - Scheme decision- options to profit or save

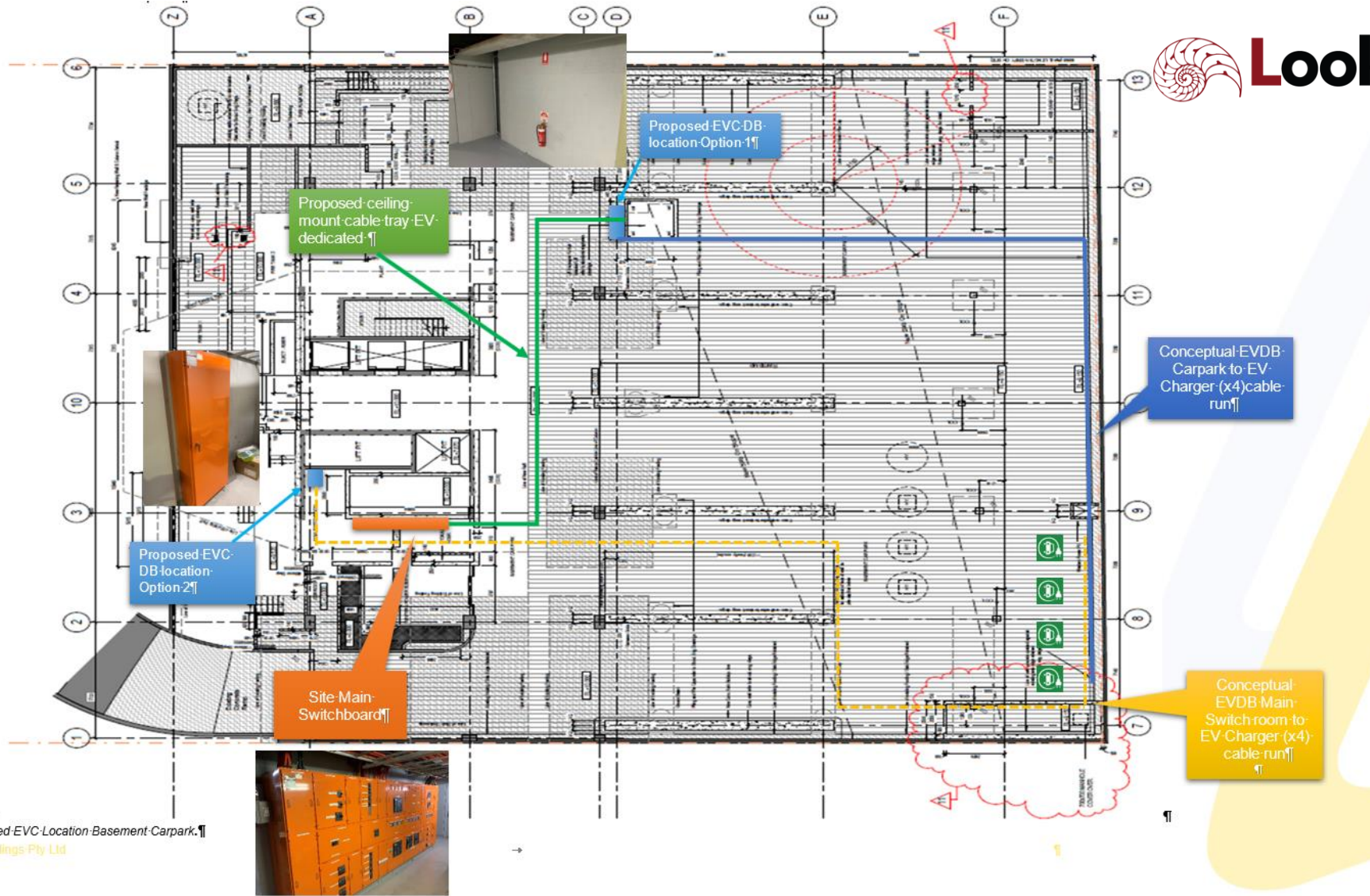


Figure-12--Proposed-EVC-Location-Basement-Carpark.¶

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Electrical Asset Ownership Matrix

Embedded Infrastructure	Embedded Network	Multi Master Network	Third Party Asset Ownership	Function	Relevance to Cost & Income
Electricity Distribution					
Transformer/s	Western Power or Property Owner	Western Power or Property Owner	Western Power or Property Owner	Energy Distribution Infrastructure	COST Risk and responsibility for continuous, reliable supply
Site Main Switchboard/s	Property Owner	Property Owner	Property Owner		
*Power Factor Correction	Property Owner	Property Owner	Property Owner		
*Back up Generation	Property Owner	Property Owner	Property Owner		
Consumer Mains Riser – (Copper Cable)	Property Owner	Property Owner	Property Owner		
Electrical Cabling Other – (Copper Cable)	Property Owner	Property Owner	Property Owner		
Distribution Boards – Floor by Floor	Property Owner	Property Owner	Property Owner		
Tenant / Resident Distribution Boards	Property Owner	Property Owner	Property Owner		
Common (House) Services Distribution Boards	Property Owner	Property Owner	Property Owner		
Mechanical Services Switch Boards	Property Owner	Property Owner	Property Owner		

* Not always deployed

Meters					
Utility Gate Meter	Western Power – Property Owner owns account	No master Gate Account	Western Power – Third party may own account	Measurement Tool for Consumption and Cost Allocation	Income Generation Asset (control of billing)
Lot / Tenant Meters	Property Owner	Western Power	Property Owner		
Common (House) Meters	Property Owner	Property Owner	Property Owner		
Meter Network Communications Hardware	Property Owner	Western Power	Third Party Owner		
DER – Distributed Energy Resources					
Solar	Property Owner	Third Party Owner	Third Party Owner	Generation	Income Generation Assets
BESS – Battery	Property Owner	Third Party Owner	Third Party Owner	Storage	
EV Charger	Property Owner	Third Party Owner	Third Party Owner	Vehicle Charging	

Foundation
Electrical
Infrastructure

Income
Generating
Assets



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Best Practice Model

Complete Scheme Ownership

- Mitigate rising energy costs
- Supplement with renewables
- Reduce emissions
- Provision for EV charging
- Save or generate income.
- Outsource reading billing functions as a “fee for service”.

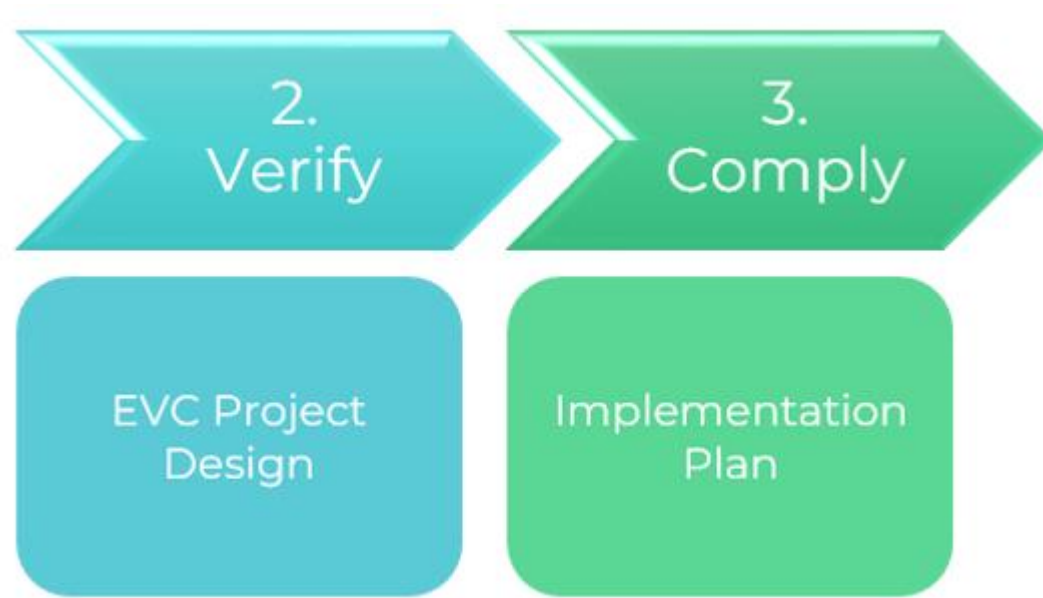


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Verify & Comply

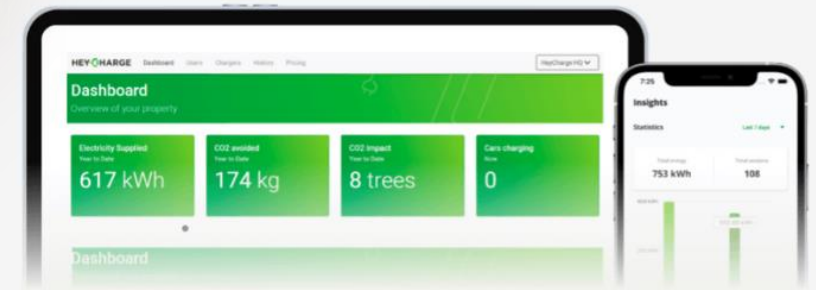
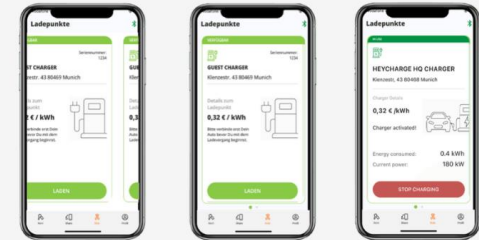


- Develop formal scope & costings to quantify funding requirements
- Formalize EVC integration design & documentation into the existing network, include required risk abatement technology (i.e load balancing & metering)
- Produce the preliminary plan & works program to ascertain indicative timelines & deliverables

Baseline Inclusions

Electric vehicle charging solutions should integrate

- Electrical network integration: Switchboard mods, New DB's, cable trays & cabling
- EV Charger product selection (Consistency is key)
- Load management / balancing solution
- Metering & billing solution

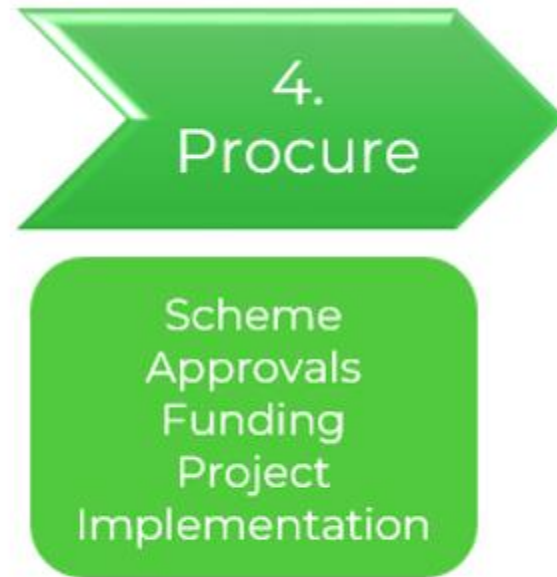


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Procure



Approvals

- Scheme approvals, Bylaws & Resolutions

Appointments

- Agreement: EVC Design & Implementation Project
- Amended Electricity Supply Agreement
- Service Level Agreement – cyclic reading, billing, reconciliation

Funding Options

- Cash
- Hire Purchase
- Lease

Retain ability to procure the electricity and on sell at regulated tariffs

Operate



Deploy an EVC service scope that will support the long term, viable operation of the EVC systems:

1. Protect the return on investment
2. Derive ongoing savings or energy on-sell income
3. Integrates with existing billing where an embedded network

EVC systems when set up and operated well can self fund the entire lifecycle and maintenance of the equipment including the ongoing billing system

Risks & Safety

- Distribution boards (DB's) needs to be clearly marked as being for the provision of EVC's to enable Emergency Services to quickly and easily identify and isolate the power supply
- Failure to provide dedicated DB's may result in a shutdown of the build's power supply if there is a problem with the charging station
- DB's should provide for a load management system and sub-metering
- Provide cable trays to all areas of the car parking



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Risks & Safety

- Power cords are a trip hazard and are unsightly
- Equity in strata and the cost of charging; user pays
- Review your fire evacuation plans; where possible, try and locate charging areas away from fire escape/exit corridors
- Review your fire systems; extinguishing battery fires requires a higher volume of water; therefore, you may need to consider increasing the diameter of your fire hoses
- To date, the insurance industry does not consider the provision of EV's in strata schemes poses an increased risk



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Key Messages

- Understand your scheme's current energy billing setup
- Start planning
 - Aim for an equitable solution
 - Establish scheme limitations & future requirements - EVC Feasibility
 - Consult all owners on timing / expectations, buy in
- Adopt by-laws
- Review your risk and safety measures around the scheme
- Retain full ownership of EV Charging Solution



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Thankyou for your time



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